

## CLAIMS:

1. An analog-to-digital conversion arrangement for converting an analog input signal into a digital output signal with a most significant part and a least significant part, comprising sample means for sampling the analog input signal, a plurality of coarse  
5 resolution analog-to-digital converters for converting the sampled analog input signal into a coarse digital signal representing the most significant part of the digital output signal, whereby the coarse resolution analog-to-digital converters are operated in an interleaved way, characterized in that the analog-to-digital conversion arrangement further comprises a fine  
10 fine resolution analog-to-digital converter for converting the sampled analog input signal into a fine digital signal representing the least significant part of the digital output signal, based upon the coarse digital signal generated by any of said coarse resolution analog-to-digital converters.
2. An analog-to-digital conversion arrangement as claimed in claim 1,  
15 characterized in that the coarse resolution analog-to-digital converters are successive approximation analog-to-digital converters.
3. An analog-to-digital conversion arrangement as claimed in claim 1 or 2,  
20 characterized in that the fine resolution analog-to-digital converter is a successive approximation analog-to-digital converter.
4. An analog-to-digital conversion arrangement as claimed in claim 1, 2 or 3,  
characterized in that the coarse resolution analog-to-digital converters are overranging  
25 successive approximation analog-to-digital converters.
5. An analog-to-digital conversion arrangement as claimed in claim 2, 3 or 4,  
characterized in that each of the coarse resolution successive approximation analog-to-digital converters comprises separately a sample- and hold circuit, a hold buffer amplifier connected thereto, at least one comparator and a coarse resolution digital-to-analog converter, the inputs

of said at least one comparator being connected to said hold amplifier and said coarse resolution digital-to-analog converter, the analog-to-digital conversion arrangement further comprising a common digital control unit connected to the outputs of the comparators of the coarse resolution successive approximation analog-to-digital converters.

5

6. An analog-to-digital conversion arrangement as claimed in claim 5, characterized in that a pair of coarse resolution analog-to-digital converters has a common coarse digital-to-analog converter which in combination with switches is operating in two interleaved coarse resolution analog-to-digital converters.

10

7. An analog-to-digital conversion arrangement as claimed in claim 5 or 6, characterized in that the fine resolution analog-to-digital converter comprises a hold buffer amplifier successively connected to the said sample- and hold circuits by means of switches, at least one comparator and a fine resolution digital-to-analog converter, the input of said at least one comparator being connected to said hold amplifier and said coarse resolution digital-to-analog converter and having at least one output connected to said common digital control unit.

15

8. An analog-to-digital conversion arrangement as claimed in claim 5 or 6, characterized in that, in order to reduce a charge redistribution between the capacitors of the respective sample- and hold circuits and the input capacitor of the buffer amplifier of the fine resolution analog-to-digital converter, switches are provided for successively briefly connecting the latter buffer amplifier to the sample-and hold circuits.

20

9. A method for converting an analog input signal into a digital output signal with a most significant part and a least significant part, comprising:

- sampling the analog input signal by sampling means;
- converting the sampled analog input signal into a coarse digital signal by a plurality of coarse resolution analog-to-digital converters operated in an interleaved way, the coarse digital signal representing the most significant part of the digital output signal, characterized in that the method further comprises:

- converting the sampled analog input signal into a fine digital signal by a fine resolution analog-to-digital converter and using the coarse digital signal generated by any of

25

30

said coarse resolution analog-to-digital converters, the fine digital signal representing the least significant part of the digital output signal.

10. A system for signal processing comprising an analog-to-digital conversion  
5 arrangement as claimed in any one of the preceding claims.

11. A system as claimed in claim 9, characterized in that the system is arranged for processing video or communication signals.